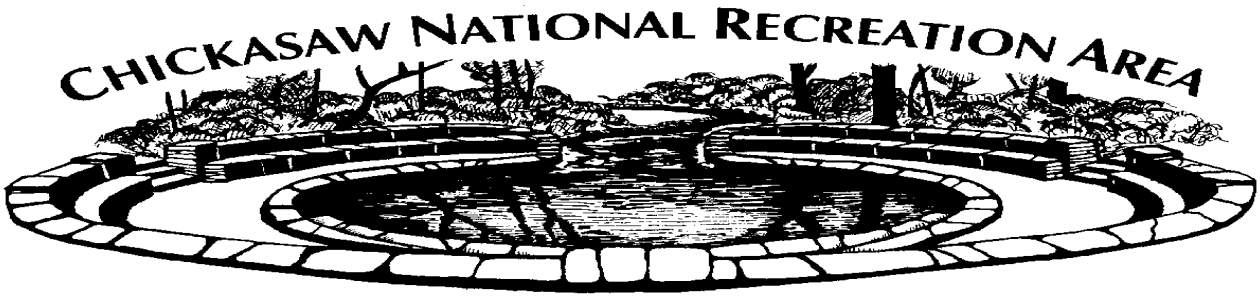
Chickasaw

National Park Service
U.S. Department of the Interior

Chickasaw National Recreation Area

Lesson: Mineral Content



Introduction to the Lesson/Activity	The importance of water ecology: Chickasaw National Recreational Area Testing for the Mineral Content in our waters.	Lesson for high school Chemistry.

Objectives	Students will: 1. learn to collect water samples for experimentation. 2. conduct a lab experiment and collect scientific data.	3. be able to interpret data collected.

Materials

- Hot plate and pan to boil water
- Butane lighters (fireplace model with long tubes)
- Water Samples
- Mineral Content (excel Doc)
- Thin metal wires, platinum preferred (Flame Test wires can be ordered from Flinn) need one wire for each water sample
- Safety Glasses

Activity

Warm Up:

Pass around a jug of water from Vendome Well. Ask the students what they think the smell is? Where does the smell come from? (If they say the water ask them why the water smells--- after all, their tap water doesn't smell). Hopefully someone says that there are minerals in the water, if not, leave it open ended.

1) Collect samples of spring water from different locations
2) Ask students to predict what minerals they think are in the water based on smell. (or taste?)
3) Using a hot plate, boil down a small amount of water samples until minerals are present. You may want to do this ahead of time with a large volume to save time.
4) Dip one metal wire into each powder and get a good coating of minerals. Turn off lights, and then insert end of wire into flame from butane lighter. There should be a burst of color. It may not last very long, and is dependent on the amount of minerals you can get on the end of the wire.
5. Have students observe the color of the flame. Using the flame test charts from the websites, have students classify what elements seem to be most abundant in the water. http://webmineral.com/help/FlameTest.shtml
6. You can repeat this process for each of the different spring samples to see if the different springs have different colors.

Alternatives/ Additions

- Have students look through spectroscopes at flame tests. This should help with color identification.
- Have other mixtures available to show other colors of other elements. See flame test website for other possibilities. Copper for example would be easy, or rust (iron oxide)

Key Vocabulary

Spring
Minerals
Aquifer
Rock layer

Essential Questions

1. What units are used to measure minerals?
2. What minerals were found in the water samples?

Oklahoma Pass Standards	Chemistry- Process Standard 1
	Environmental Science- Process Standard 1
	Standard 1, 2 & 4
	Biology- Process Standard 1
	Physics- Process Standard 1
	Physical Science- Process Standard 1